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THE FLORA OF NORTHAMPTON COUNTY, PENNSYLVANIA

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The county of Northampton is located on the eastern border of Pennsylvania. In shape it somewhat resembles a truncated funnel lying on its side. It was formerly a portion of Bucks county from which it was separated in 1752. When originally erected it included what is now Lehigh, Schuylkill, Carbon, Monroe, Pike, and all the other counties north of them to the state of New York. In 1772 the northwestern part of the county became Northumberland county; in 1796 Wayne county took the northeastern part; in 1811 Schuylkill county was cut off; the following year Lehigh county was formed; Monroe county was laid out in 1836 and Carbon county in 1843. The present area of Northampton county is about 380 square miles.

This territory lies south of the Kittatinny mountain, sometimes known as the Blue mountain, which is a part of the Appalachian chain. The crest of the mountain forms its northern boundary and the eastern and western boundaries of the county are formed by the Delaware and Lehigh rivers respectively. These two rivers flow through gaps in the Kittatinny mountain—the Delaware river at the Delaware Water Gap in the northeast corner of the county, and the Lehigh river at Lehigh Water Gap in the northwest corner. The direction of the rivers from these gaps is SSE. The distance along the Kittatinny mountain between the two rivers, in a straight line, is twenty-seven and a half miles. The Lehigh river flows SSE. as far as Allentown. Here it is deflected ENE., making a right angle bend and, flowing past Bethlehem and Freemansburg, it empties into the Delaware

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river at Easton. The distance between Lehigh Gap and Allentown, by water, is eighteen miles and from Allentown to Easton fourteen miles.

There are seventeen townships in the county and all but two of them lie between the two rivers and the Blue mountain. The other two lie south of the Lehigh river. On the south the county borders on Bucks county.

Northampton county may be divided into three prominent geological regions. These are the slate belt in the northern portion, the limestone belt in the middle, and the syenite or gneiss belt in the southern portion of the county.

As has already been noted, the Kittatinny mountain extends along the northern border of the county. It is a ridge of Oneida sandstone. Its narrow, rocky crest is generally of the uniform height of 1,500 to 1,600 feet above the sea. There are, however, several depressions along its crest, among them being Little Gap, four miles east of Lehigh Gap; Tot's Gap, two and one half miles west of the Delaware Water Gap; Fox's Gap, one mile west of Tot's Gap; Wind Gap, eleven miles west of the Delaware Water Gap. Probaby the most curious is the Wind Gap which is five hundred feet deep. A railroad passes through it, the crest of the mountain east and west of it being at about 1,500 feet, while the highest railroad grade level in the gap is at 978 feet. To the south of the mountain lies the Great Valley, so called by the early settlers, but in the language of the *Lenni Lenape* or Delaware river Indians it is known as the Kittatinny Valley. The mountain, no doubt, received its name from the valley, but when seen from the southern portion of the county on a clear day it has a bluish tint, hence is frequently known as the Blue mountain.

To the south of the mountain extends a steep slope of Hudson river slate which is covered by fragments of sandstone. This slate belt occupies a nearly uniform width of about nine miles from the mountain crest and has a height of approximately two hundred feet above the flat limestone belt and extends from the Delaware to the Lehigh river. It is a region of low, flat-topped hills with numerous small valleys. The soil is largely clayey in structure.

The limestone region is about eight miles wide and lies south of the slate belt. It is in reality a great plain with many intersecting, gently sloping valleys. I quote from the Second Geological Survey of Pennsylvania where it is stated that its "north border commences about half a mile north of Siegfried's Bridge and continues nearly due east until it reaches a point a little southwest of Bath. Here it makes a northward bend of about a mile and, passing through Bath, it continues with a zig-zag border almost due east to Nazareth. At the latter point it bends toward the northeast and continues in this direction through the village of Martin's Creek and then extends as a strip about half a mile wide parallel to the Delaware river as far as Belvidere." Here it leaves Pennsylvania and crosses into New Jersey. The southern border of the limestone belt is where it meets the South mountains with this exception, that at Bethlehem it continues through a break in the mountains and forms the Saucon valley basin. This limestone plain has an elevation of about 400 feet, with the hilltops approximating 450 feet. It consists largely of rich farm lands underlaid by limestone soil and maintaining some few patches of woodland.

The South mountains or Durham and Reading hills form the southern, syenite, belt. This region lies south of the Lehigh river, extending about five miles within the county limits. It is, however, actually seven miles wide if the portion which lies in Bucks county is included. The South mountains consist of parallel highland ridges which are a continuation of the Highlands of New York and New Jersey through eastern Pennsylvania ending in the Schuylkill river in Berks county. Locally, they are also known as the Lehigh mountains. They are long and narrow ridges with gentle slopes and rounded summits with a maximum altitude of 1,100 feet. Between these ridges lie valleys of rich limestone land but the soil on the mountains is rocky and poor. The mountain slopes were at one time heavily wooded but none of the original forest remains. Second growth timber has covered portions of the hills but this is occasionally denuded in patches by mountain fires. The rock formation of these ridges has been referred to the Laurentian age. Large rounded boulders

of gneiss, once presumably a part of cliffs no longer existing, are found on the south slope of the mountain.

The limestone belt has but few streams, the drainage being principally underground through sinks. The Monocacy creek enters the limestone plain from the slate hills at Bath and empties

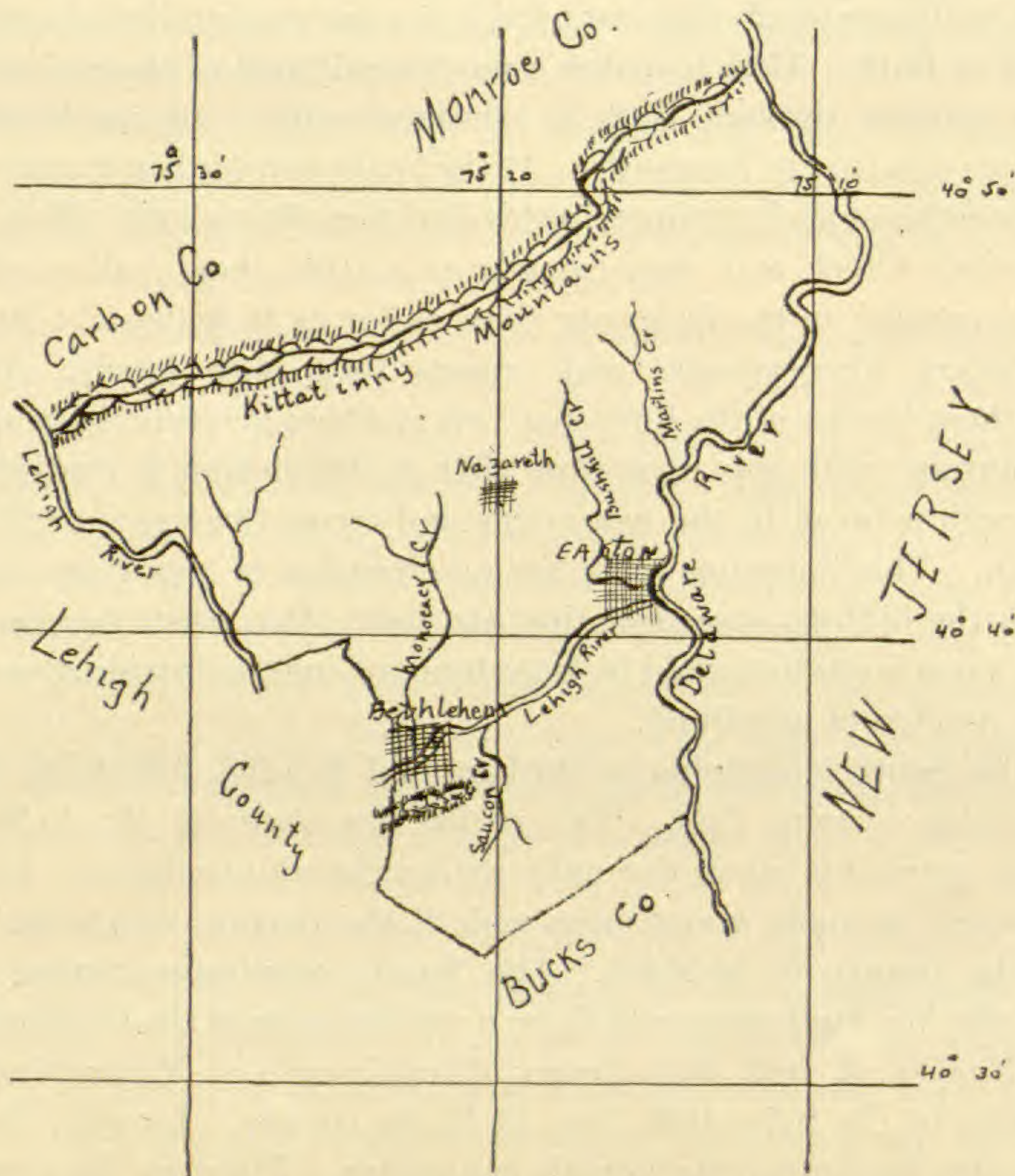


FIG. 1. Map of Northampton County, Pennsylvania.

into the Lehigh river at Bethlehem. The Saucon creek drains the beautiful Saucon Valley and flowing north empties into the Lehigh river at Freemansburg. All the rest of the streams head near the Kittatinny mountain and flow south either into the Delaware or Lehigh rivers thus flowing from the slate belt into the limestone belt.

It is probable that other conditions have as strong a bearing

on the character of the vegetation of this region as its geological environment. The altitude of its hills and mountains and the character of its soil are undoubtedly determining factors of no small moment. But its sunshine, its rain, and the period between its frosts are equally worthy of notice.

It is no less a fact that the flora of Northampton County is in a large measure the product of our climate. This is of the mountain type, with rigorous winters. At Easton the average annual snowfall is about thirty-five inches and the lowest temperature recorded in eighteen years is 14° F. below zero. The highest temperature during the same time is 99° F. For a period of twenty-five years the normal annual temperature was 50.8° F. The extremes of temperature are greater in the valleys than on the uplands. The first killing frosts of autumn generally occur about the latter part of October. The last frosts in spring are usually during the month of April. The average number of rainy days with a precipitation of .01 inch or more was 114 per annum.

The following table, covering a period of ten years, taken from the records of the Weather Bureau of the United States Department of Agriculture showing the monthly, annual, and average precipitation in inches and hundredths for Bethlehem, will, no doubt, be of considerable interest. The elevation of Bethlehem is given as 260 feet.

Year	January	February	March	April	May	June	July	August	September	October	November	December	Annual
1888	5.08	3.50	3.84	3.30	2.84	3.12	2.64	9.20	10.93	2.77	3.82	3.60	54.64
1889	4.66	1.94	3.35	4.30	4.30	5.28	9.93	4.10	6.14	3.30	8.72	1.66	57.68
1890	2.28	4.43	6.12	2.58	7.44	3.10	6.02	5.92	3.51	6.17	0.82	2.98	51.37
1891	5.62	3.88	5.38	1.96	2.29	2.44	5.80	5.45	2.53	2.66	1.89	4.11	44.01
1892	5.76	0.62	4.67	0.70	4.40	3.89	1.37	3.33	2.54	0.44	6.70	1.60	36.02
1893	2.79	6.41	2.57	3.38	4.59	2.97	1.88	4.61	2.14	2.79	3.51	2.47	40.11
1894	1.54	4.50	1.29	2.41	10.80	2.49	2.83	2.07	8.54	5.04	2.86	4.85	49.22
1895	4.04	0.89	2.31	4.46	2.33	4.48	3.84	2.96	0.63	3.69	1.66	2.61	33.90
1896	1.26	6.41	5.82	1.27	6.30	3.60	6.13	2.22	3.68	2.77	4.32	0.70	44.48
1897	2.35	2.57	2.50	3.41	6.05	4.03	4.84	3.64	2.10	1.22	5.99	4.22	42.92
M'ns	3.53	3.51	3.78	2.77	5.13	3.54	4.53	4.35	4.27	3.09	4.03	2.88	45.43

In addition to its geology and climate, its commerce is another factor which must be taken into consideration in a survey of

the flora of the county, at the present time. In observing the plants growing in this region it is particularly noticeable that many of the species are not natives of the soil but have been introduced from other lands. The seeds have been scattered through the importation of products from other states and countries, and we find to-day that about twenty-five per cent. of our flora is exotic. Through changes of physical environments some of our indigenous species have become extinct in this locality. Even some of the localities have become extinct as will be noted by the reference to plants found on Calypso Island. This island comprised about twenty acres of woodland and was situated in the Lehigh river at Bethlehem, a part of it being in Northampton county. About seven years ago its large and beautiful trees were cut down and the island dug away and the south channel of the river filled in to become the roadbed of a railroad.

In the following list grateful acknowledgment is made to Dr. Porter's Flora of Pennsylvania for many species noted therein as having been found in the county; also to Mr. John A. Ruth and Mr. George W. Caffrey both of Bethlehem who have kindly furnished notes from their herbaria. The writer's herbarium contains a majority of the plants noted.

OPHIOGLOSSACEAE

- OPHIOGLOSSUM VULGATUM* L. Professor Englemann had a specimen collected by E. Durand at Bethlehem in 1853 with small lanceolate fronds; most of the plants, however, were immature. (Bull. Torrey Club 24: 548. 1897.)
BOTRYCHIUM VIRGINIANUM (L.) Sw. In woods on Lehigh Mt. Variable in size. July 19, 1897.

OSMUNDACEAE

- OSMUNDA REGALIS* L. In marshy ground along mountain streams on Lehigh Mt. about one mile from South Bethlehem at an altitude of about 940 feet. May 30, 1900.
OSMUNDA CINNAMOMEA L. Along the banks of mountain streams in rocky soil on Lehigh Mt.; also along the Lehigh river. Common. May 20, 1897.
OSMUNDA CLAYTONIANA L. In open woods on Lehigh Mt. and in association with the preceding. May 30, 1897.

POLYPODIACEAE

- ONOCLEA SENSIBILIS* L. Along the banks of the Lehigh river and Monocacy creek. In moist soil on Lehigh Mt. July 15, 1899.
MATTEUCCIA STRUTHIOPTERIS (L.) Todaro. Reported by Mr. H. W. Pretz as having been found along the Hokendauqua creek and near Nazareth, but now extinct at these places. (Bull. Torrey Club 38: 68.)
DENNSTAEDTIA PUNCTILOBULA (Michx.) Moore. On open hillsides, Lehigh Mt. Growing in patches.
DRYOPTERIS ACROSTICHOIDES (Michx.) Kuntze. On rocky hillsides and in woods on Lehigh Mt. June 5, 1897.

- DRYOPTERIS NOVEBORACENSIS* (L.) A. Gray. In woods on Lehigh Mt. (J. A. Ruth.)
- DRYOPTERIS THELYPTERIS* (L.) A. Gray. Along mountain streams near Lehigh University. (J. A. Ruth.)
- DRYOPTERIS MARGINALIS* (L.) A. Gray. Common along the Lehigh river and in rocky woods on Lehigh Mt. July 15, 1899.
- PHEGopteris PHEGopteris* (L.) Underw. Along mountain streams, Lehigh Mt. (J. A. Ruth.)
- CAMPTOSORUS RHIZOPHYLLUS* (L.) Link. On limestone rocks in shaded situations along Monocacy creek two miles from Bethlehem.
- ASPLENIUM EBENOIDES* R. R. Scott. On limestone rocks on the Lehigh river near Easton. (Porter.)
- ASPLENIUM TRICHOMANES* L. On limestone rocks near Freemansburg. Sept. 4, 1899.
- ASPLENIUM MONTANUM* Willd. At Weyget above Easton. (Porter.)
- ASPLENIUM ACROSTICHOIDES* Sw. Along mountain streams, Lehigh Mt. (J. A. Ruth.)
- ASPLENIUM FILIX-FOEMINA* (L.) Bernh. Along the Lehigh canal and river. July 15 to Sept. 4, 1899. Common.
- ADIANTUM PEDATUM* L. Common in woods on Lehigh Mt. Preferring moist situations. July 4, 1900.
- PTERIDIUM AQUILINUM* L. (Kuhn). In dry open woods, Lehigh Mt. July 1, 1899.
- PELLAEA ATROPURPUREA* (L.) Link. On limestone rocks near Freemansburg. Sept. 4; also at Easton.
- POLYPODIUM VULGARE* L. In woods on Lehigh Mt.; in rocky situations near Wind Gap.

EQUISETACEAE

- EQUISETUM ARVENSE* L. In sandy soil along Lehigh river and Monocacy creek. May, 1897.
- EQUISETUM HYEMALE* L. In thickets along Monocacy creek. May, 1898.

SELAGINELLACEAE

- SELAGINELLA APUS* (L.) Spring. Along cold brooks on Lehigh Mt. July 29, 1899.

PINACEAE

- PINUS STROBUS* L. In cultivation in cemetery at Bethlehem.
- PINUS VIRGINIANA* Mill. In sandy soil. (Porter.)
- PINUS RIGIDA* Mill. In dry, sandy or rocky soil. (Porter.)
- TSUGA CANADENSIS* (L.) Carr. In stony or rocky soil. (Porter.)
- THUJA OCCIDENTALIS* L. Along Lehigh river at Freemansburg; cultivated in yards and cemeteries. June 11, 1900.*
- JUNIPERUS VIRGINIANA* L. On rocky slopes along Monocacy creek.

TYPHACEAE

- TYPHA LATIFOLIA* L. In marshes along Monocacy creek and along Lehigh canal near Freemansburg. July 26 to Sept. 26, 1895.
- TYPHA ANGUSTIFOLIA* L. In marshes. (Porter.)

SPARGANIACEAE

- SPARGANIUM EURYCARPUM* Engelm. In meadows along Monocacy creek two miles north of Bethlehem. June 23, 1902. (J. A. Ruth.) Along bank of Lehigh river at Island Park, Aug. 25, 1903.
- SPARGANIUM ANDROCLADUM* (Engelm.) Morong. In swamps or shallow water. (Porter.)

* This evergreen, reports in various works to the contrary notwithstanding, has yet to be collected as a wild plant in Pennsylvania.—ED.

NAIADACEAE

- POTAMOGETON NATANS L. In Monocacy creek 3 miles from Bethlehem. Aug. 20, 1899.
- POTAMOGETON AMPLIFOLIUS Tuckerm. In lakes and ponds. (Porter.)
- POTAMOGETON PULCHER Tuckerm. In slow streams or ponds. (Porter.)
- POTAMOGETON NUTTALLII Cham. & Sch. In stream at Easton. (Porter.)
- POTAMOGETON LONCHITES Tuckerm. In stream at Easton. (Porter.)
- POTAMOGETON PERFOLIATUS L. In Delaware river. (Porter.)
- POTAMOGETON PERFOLIATUS RICHARDSONII A. Bennett. At Easton. (Porter.)
- POTAMOGETON CRISPUS L. In Monocacy creek about 2 miles from Bethlehem, June 23, 1902; also in Lehigh river and Bushkill creek.
- POTAMOGETON OBTUSIFOLIUS Mert. & Koch. In stream at Easton. (Porter.)
- POTAMOGETON DIVERSIFOLIUS Raf. In still water. (Porter.)
- POTAMOGETON DIVERSIFOLIUS MULTIDENTICULATUS Morong. At Easton. (Porter.)
- POTAMOGETON PECTINATUS L. In stream at Black Horse Tavern. (Porter.)
- POTAMOGETON ROBBINSII Oakes. In Lehigh river.
- ZANNICHELLIA PALUSTRIS L. In ponds and ditches. (Porter.)
- NAIAS FLEXILIS (Willd.) Rost. & Schmidt. In ponds and streams. (Porter.)

ALISMACEAE

- ALISMA PLANTAGO-AQUATICA L. On muddy banks of the Lehigh river near Bethlehem. July 15, 1899.
- SAGITTARIA ENGELMANNIANA J. G. Smith. In swamps along Monocacy creek, Aug. 12, 1899, and on mud flats along the Lehigh river at Island Park, Aug. 25, 1902.
- SAGITTARIA LATIFOLIA Willd. In shallow water along Monocacy creek and Lehigh river. Aug. 5, 1899.
- SAGITTARIA LATIFOLIA PUBESCENS (Muhl.) J. G. Smith. At Seidersville. (Porter.)
- SAGITTARIA RIGIDA Pursh. In wet sandy soil along Lehigh river at Island Park. Aug. 25, 1902.
- SAGITTARIA GRAMINEA Michx. In shallow water or mud. (Porter.)

VALLISNERIACEAE

- PHILOTRIA CANADENSIS (Michx.) Britton. In Lehigh river and Monocacy creek.
- VALLISNERIA SPIRALIS L. In the Lehigh canal near Glendon.

GRAMINEAE

- ANDROPOGON SCOPARIUS Michx. Along Lehigh Valley R. R. near Bethlehem. Aug., 1899.
- ANDROPOGON FURCATUS Muhl. In dry soil along the Monocacy creek one mile from Bethlehem. Aug. 11, 1899.
- ANDROPOGON VIRGINICUS L. In sandy soil in thickets, Bethlehem. Aug. 5, 1899.
- CHRYSOPOGON AVENACEUS (Michx.) Benth. In dry soil along the towpath between Bethlehem and Freemansburg. Sept. 4.
- PASPALUM MUHLENBERGII Nash. In sand or stony ground. (Porter.)
- PASPALUM LAEVE Michx. In fields. (Porter.)
- SYNTHESISMA SANGUINALE (L.) Dulac. In cultivated and waste places. Common. July 15, 1899.
- SYNTHESISMA HUMIFUSUM (Pers.) Rydb. In cultivated field near Bethlehem. Sept. 7, 1899.
- ECHINOCLOA CRUS-GALLI (L.) Beauv. Common in cultivated and waste places.
- PANICUM CAPILLARE L. In dry soil, in fields and roadsides. Aug. 16, 1899.
- PANICUM PHILADELPHICUM Bernh. In dry soil at Bethlehem. Aug. 7, 1899.
- PANICUM MILIACEUM L. In waste places. (Porter.)

- PANICUM PROLIFERUM Lam. In moist sandy situations, Bethlehem. Aug. 21, 1899.
- PANICUM VIRGATUM L. In moist or dry soil. (Porter.)
- PANICUM AGROSTOIDES Spreng. In wet grounds. (Porter.)
- PANICUM LONGIFOLIUM Torr. In wet ground along towpath between Bethlehem and Freemansburg. Sept. 4, 1899.
- PANICUM STIPITATUM Nash. In moist soil. (Porter.)
- PANICUM ANCEPS Michx. In wet or moist ground along towpath near Freemansburg; and along Saucon creek $1\frac{1}{2}$ miles from its mouth. Sept. 4, 1899.
- PANICUM LINEARIFOLIUM Scribn. In dry soil, especially on hillsides. (Porter.)
- PANICUM DEPAUPERATUM Muhl. In dry soil on hillsides with northern exposure near South Bethlehem. May 20, 1899.
- PANICUM DICHOTOMUM L. On shaded hillsides, Lehigh Mt.
- PANICUM BARBULATUM Michx. In moist soil. (Porter.)
- PANICUM BOREALE Nash. In moist soil. (Porter.)
- PANICUM NITIDUM Lam. In woods, Lehigh Mt.
- PANICUM IMPLICATUM Scribn. In dry soil. (Porter.)
- PANICUM UNCIPHYLLUM Trin. In dry soil. (Porter.)
- PANICUM ATLANTICUM Nash. In dry soil. (Porter.)
- PANICUM TENNESSEENSE Ashe. In woods. (Porter.)
- PANICUM SCRIBNERIANUM Nash. In dry or moist soil at Easton. (Porter.)
- PANICUM SPHAEROCARPON Ell. In dry soil. (Porter.)
- PANICUM COMMUTATUM Schultes. In dry woods and thickets. (Porter.)
- PANICUM MACROCARPON Le Conte. In moist places. (Porter.)
- PANICUM PORTERIANUM Nash. In woods on Lehigh Mt. south of Lehigh University. June 15, 1900. (J. A. Ruth.)
- PANICUM PUBIFOLIUM Nash. In rocky woods. (Porter.)
- PANICUM CLANDESTINUM L. In thickets near Bethlehem. July 29, 1899.
- CHAETOCHELOA GLAUCA (L.) Scrib. In waste places and cultivated grounds. Common.
- CHAETOCHELOA VERTICILLATA (L.) Scrib. In waste places. Aug. 9, 1899. Bethlehem.
- CHAETOCHELOA VIRIDIS (L.) Scrib. In waste places and cultivated grounds about Bethlehem.
- CHAETOCHELOA ITALICA (L.) Scrib. Occasionally in waste places.
- CENCHRUS TRIBULOIDES L. In dry soil along towpath near Bethlehem. Aug. 22, 1899.
- HOMALOCENCHRUS VIRGINICUS (Willd.) Britton. In wet soil along Lehigh River near Bethlehem. Aug. 5, 1899.
- HOMALOCENCHRUS ORYZOIDES (L.) Poll. In moist soil along Monocacy creek, Bethlehem. Sept. 3, 1899.
- PHALARIS ARUNDINACEA L. In meadows along Monocacy creek, Bethlehem. June 11, 1900.
- PHALARIS CANARIENSIS L. In dry soil along towpath near Bethlehem. July, 1902. (J. A. Ruth.)
- ANTHOXANTHUM ODORATUM L. Common in dry soil on Lehigh Mt. near Lehigh University. May 20, 1899.
- ARISTIDA DICHOTOMA Michx. In woods on Lehigh Mt. Sept., 1899.
- ARISTIDA GRACILIS Ell. In dry soil. (Porter.)
- ARISTIDA PURPURASCENS Poir. In dry soil. (Porter.)
- MUHLENBERGIA SOBOLIFERA (Muhl.) Trin. In dry rocky woods one mile east of Bethlehem. Sept. 4, 1899. Altitude 360 feet.
- MUHLENBERGIA MEXICANA (L.) Trin. In fields and hedges, Bethlehem. Sept. 16, 1899. Altitude 350 feet.
- MUHLENBERGIA SYLVATICA Torr. In moist woods and along streams. (Porter.)
- MUHLENBERGIA TENUIFLORA (Willd.) B.S.P. In rocky woods. (Porter.)
- MUHLENBERGIA DIFFUSA Schreb. Along roadsides, Bethlehem. Sept. 16, 1899.
- BRACHYELYTRUM ERECTUM (Schreb.) Beauv. In moist places or woods. (Porter.)

- PHLEUM PRATENSE L. Common in fields.
- SPOROBOLUS LONGIFOLIUS (Torr.) Wood. In dry soil. (Porter.)
- CINNA ARUNDINACEA L. In moist woods and swamps. (Porter.)
- AGROSTIS ALBA L. In cultivated fields. Common.
- AGROSTIS PERENNANS (Walt.) Tuckerm. In moist soil along canal near Bethlehem. Aug. 20, 1899.
- AGROSTIS CANINA L. In meadows along Delaware river above Easton. (Porter.)
- AGROSTIS HYEMALIS (Walt.) B.S.P. In dry or moist soil. (Porter.)
- AGROSTIS SCRIBNERIANA Nash. In dry soil. (Porter.)
- CALAMAGROSTIS CANADENSIS (Michx.) Beauv. In swamps and wet, often sandy, soil. (Porter.)
- HOLCUS LANATUS L. In meadows along Monocacy creek near Bethlehem. May 30, 1900.
- AIRA PRAECOX L. In dry fields, Bethlehem. (Porter.)
- DESCHAMPSIA FLEXUOSA (L.) Trin. In dry, sandy soil. (Porter.)
- TRisetum PENNSYLVALICUM (L.) Beauv. In a ravine, Lehigh Mt., near Lehigh University. June 15, 1900. (J. A. Ruth.)
- AVENA SATIVA L. Cultivated and in waste places.
- ARRHENATHERUM ELATIUS (L.) Beauv. In fields and waste places. (Porter.)
- DANTHONIA SPICATA (L.) Beauv. In dry soil. (Porter.)
- DANTHONIA COMPRESSA Austin. In woods, Lehigh Mt. July 1, 1899. (J. A. Ruth.)
- CAPRIOLA DACTYLON (L.) Kuntze. On ore dumps in Bethlehem Steel Co.'s yards. Reported in Torrey Bulletin Jan., 1892. (Porter.)
- BOUTELOUA CURTIPENDULA (Michx.) Torr. In rocky woods one mile east of Bethlehem. Sept. 4, 1899. Altitude 360 feet.
- ELEUSINE INDICA (L.) Gaertn. Along roadsides and waste places, Bethlehem. Aug. 5, 1899.
- SIEGLINGIA SESLERIODES (Michx.) Scribn. In sandy soil along towpath east of Bethlehem. Aug. 5, 1899.
- ERAGROSTIS CAPILLARIS (L.) Nees. In dry soil at Bethlehem. Aug. 7, 1899.
- ERAGROSTIS FRANKII Steud. Along Delaware River above Easton. (Porter.) In fields and along roadsides, Bethlehem.
- ERAGROSTIS PURSHII Schrad. At Easton. (Porter.) Along railroad tracks east of Bethlehem, and in dry soil along roadside. Aug. 5, 1899.
- ERAGROSTIS MAJOR Host. In dry soil. Bethlehem. Aug. 9, 1899.
- ERAGROSTIS PECTINACEA (Michx.) Steud. Common in waste places at Bethlehem. Aug. 5, 1899.
- ERAGROSTIS HYPNOIDES (Lam.) B.S.P. On sandy shore of Lehigh river at Bethlehem; also on Calypso Island. Aug. 22, 1899.
- EATONIA PENNSYLVANICA (DC.) A. Gray. In moist shady places along bank of Lehigh river one mile east of Bethlehem. June 3, 1899.
- EATONIA NITIDA (Spreng.) Nash. In dry woods. (Porter.)
- DACTYLIS GLOMERATA L. In fields and waste places. Very common.
- POA ANNUA L. Common in fields and waste places.
- POA COMPRESSA L. Common in fields and waste places.
- POA PRATENSIS L. In fields and meadows. Common.
- POA TRIVIALIS L. In meadows at Bethlehem. June 11, 1900. (J. A. Ruth.)
- POA FLAVA L. In swampy places. (Porter.)
- POA BREVIFOLIA Muhl. In rocky woods. (Porter.)
- PANICULARIA NERVATA (Willd.) Kuntze. In moist soil along canal, Bethlehem. June 20, 1899.
- PANICULARIA AMERICANA (Torr.) MacM. In moist soil, South Bethlehem.
- PANICULARIA PALLIDA (Torr.) Kuntze. In shallow water. (Porter.)
- PANICULARIA FLUITANS (L.) Kuntze. In swamps, wet places or in water. (Porter.)
- FESTUCA OCTOFLORA Walt. In fields and waste places. (Porter.)
- FESTUCA OVINA DURIOUSCULA (L.) Hack. In dry soil. (Porter.)
- FESTUCA ELATIOR L. In fields and waste places. (Porter.)

- FESTUCA NUTANS Willd. In woods on Lehigh Mt. July 1, 1899. (J. A. Ruth.)
- BROMUS CILIATUS L. In woods and moist thickets. (Porter.)
- BROMUS TECTORUM L. In streets of Easton. (Porter.)
- BROMUS STERILIS L. In waste places, Easton. (Porter.)
- BROMUS KALMII A. Gray. In moist woods and thickets. (Porter.)
- BROMUS SECALINUS L. In waste places and roadsides at Bethlehem. June 25, 1902.
- BROMUS RACEMOSUS L. In waste places and in dry soil at Bethlehem. May 23, 1899.
- LOLIUM PERENNE L. Along roadsides and in waste places, Bethlehem. July 10, 1899.
- LOLIUM TEMULENTUM L. In waste and cultivated grounds. (Porter.)
- AGROPYRON REPENS (L.) Beauv. Around stables and in waste places, Bethlehem. June 21, 1899.
- ELYMUS STRIATUS Willd. In woods and on banks, Easton. (Porter.)
- ELYMUS VIRGINICUS L. In moist sandy soil along Lehigh river near Bethlehem. Aug. 22, 1899.
- ELYMUS CANADENSIS L. In moist sandy soil along towpath east of Bethlehem. Aug. 5, 1899.
- HYSTRIX HYSTRIX (L.) Millsp. In shady places along Saucon creek $\frac{1}{2}$ mile from its mouth. Sept. 4, 1900.

(To be continued)

SOME RARE OHIO PLANTS FROM ASHTABULA COUNTY, OHIO

BY OTTO E. JENNINGS

During the latter part of the summer there came to me an inquiry from my friend Mr. Robert J. Sim regarding the possible occurrence of the rare orchid, *Tipularia discolor* (Pursh) Nuttall, in Ashtabula County, Ohio. A doubt having been expressed that the orchid would be found that far north, Mr. Sim expressed his firm belief in the correctness of his record and, later in the season, October 5, 1911, sent in to the Carnegie Museum several fine specimens of the plants, one of the plants still retaining the dead flower-stalk and seed-pods. Part of these plants were pressed and entered in the Herbarium of the Carnegie Museum, and part of them planted on the grounds of Dr. J. F. Shafer, the Pittsburgh orchid specialist. Accompanying the plants came from Mr. Sim a pencil sketch of flowers bearing the legend "Aug. 1, 1903, Andrew's Wood. 4 or 5 plants found. Jefferson, O.," and also a sketch done in color showing the single erect leaves, beautifully purplish dorsally. The color sketch bore the label "Andrews' Wood, Oct. 22, 1903. Jefferson, Ohio."